II. Remarks

Reconsideration and re-examination of this application in view of the above amendments and the following remarks is herein requested. By this paper, claims 1-3, 5, 7, 9, 11-13, and 16-24 are pending in the application. Claims 4, 6, 8, 10, 14, and 15 have been cancelled, and claims 12, 13, 16, and 17 have been withdrawn. Claims 1-3 have been amended, and claims 18-24 have been added. Support for the above amendments may be found in Applicants' specification as originally filed.

Interview

Applicants sincerely thank Examiner Mancho for granting a telephonic interview on April 2, 2008. Applicants intend that the discussion of the claims and rejections will result in a mutual understanding of the positions taken and an early resolution thereof.

Rejections Under 35 U.S.C. § 103

Pending claims 1-3, 5, 7, 9 and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pub. No. 2005/0149240 to Tseng et al. (Tseng), in view of U.S. Pat. No. 6,732,033 issued to LaPlante et al. (LaPlante). This rejection is respectfully traversed.

Applicants respectfully assert that Tseng and LaPlante, even in combination, fail to teach each and every element of the invention as recited in currently amended claim 1. For example, independent claim 1, from which claims 2, 3, 5, 7, 9, and 11 depend, includes first and second linear accelerometers configured to measure acceleration in a first direction and third and fourth linear accelerometers configured to measure acceleration in a second direction, wherein the first and second

accelerometers are configured to generate a first and second linear acceleration signals defining a first set of linear acceleration signals and the third and fourth accelerometers are configured to generate third and fourth linear acceleration signals defining a second set of linear acceleration signals. Independent claim 1 further includes a signal adjuster configured to transform the first and second sets of linear acceleration signals received from the accelerometers, and a filter configured to receive the transformed first and second sets of linear acceleration signals and process at least one of the transformed first and second sets of linear acceleration signals into at least one of a roll rate, a roll angle, and a yaw rate.

The Examiner has stated, and Applicants agree, that Tseng does not disclose two accelerometers measuring acceleration in a first direction and two other additional accelerometers measuring acceleration in a second direction. Thus, Tseng does not disclose accelerometers that generate first and second linear acceleration signals, defining a first set of linear acceleration signals, based on the acceleration of the vehicle in a first direction, and third and fourth linear acceleration signals, defining a second set of linear acceleration signals, based on the acceleration of the vehicle in a second direction.

Moreover, Tseng fails to teach, suggest, or disclose a filter configured to process at least one of the first and second sets of linear acceleration signals into at least one of a roll rate, a roll angle, and a yaw rate. To the contrary, Tseng's system uses a standard yaw rate stability control sensor set, which includes a lateral acceleration sensor, a yaw rate sensor, a steering angle sensor, and a wheel speed sensor, together with a roll rate sensor and a longitudinal accelerometer (p. 2, para. [0025]). These sensors make up a sensing system 16, which is coupled to a control system 18 (*Id.*). An IMU kinematic equation generator 70 is coupled to the roll rate

sensor 34, the pitch rate sensor 37, and yaw rate sensor 38 (p. 4, para. [0044]). The IMU kinematic equation generator 70, along with a tuning block 68 and a summing block 72, processes signals from the sensors and provides them to an integration block 78. (*Id.*) (Note: As discussed in the interview of 4/2/08, the integration block appears to be labeled as element 74 in Fig. 4). The integration block 78 determines the pitch and roll angles of the vehicle (*Id.*).

Thus, it is clear that any filter of Tseng is not configured to receive first and second linear acceleration signals based on the acceleration of the vehicle in a first direction and third and fourth linear acceleration signals based on the acceleration of the vehicle in a second direction, defining first and second sets of linear acceleration signals, and process at least one of the first and second sets of linear acceleration signals into at least one of a roll rate, a roll angle, and a yaw rate. Instead, Tseng determines at least one of a roll rate, a roll angle, and a yaw rate from angular rate sensors.

Applicants respectfully assert that LaPlante also lacks any teaching, suggestion, or disclosure of a filter configured to receive first, second, third, and fourth linear acceleration signals, defining first and second sets of linear acceleration signals, and process at least one of the first and second sets of linear acceleration signals into at least one of a roll rate, a roll angle, and a yaw rate. Although LaPlante discloses first and second accelerometers 20, 22 configured to measure acceleration of the Sprung Mass (SM) and Unsprung Mass (USM) in a z-direction, there is no teaching of any filter that is configured to receive signals from the accelerometers of the SM and USM and process these signals into at least one of a roll rate, a roll angle, and a yaw rate. Instead, the invention of LaPlante is directed toward a

method for determining whether a shock absorber system is compressing and for generating a target control signal for a shock absorber system (Col. 2, lines 44-47).

The system taught in LaPlante may include a pitch and roll processor 58 to generate a modification to a critically damped coefficient ξ (Col. 10, lines 24-26). The pitch and roll processor 58 receives the acceleration signal of the sprung mass along the pitch (x) and roll (y) axes and determines when braking, acceleration, or cornering is occurring (Col. 10, lines 26-35). "Once one of these conditions is detected and the magnitude of the condition computed, the pitch and roll processor 58 modifies the fractional amount of damping in all four corners of the vehicle by increasing the damping to approach critical damping." (Col. 10, lines 36-40). The result of the pitch and roll processor 58 is a modified damping coefficient: ξ mod (Col. 10, lines 42-44). The resulting effect is that during straight driving, damping is less, but if either lateral or longitudinal acceleration is occurring, then the dampers "stiffen up." (Col. 10, lines 45-50). Thus, it is clear that LaPlante also fails to teach, suggest, or disclose that which Tseng lacks – a filter configured to receive first, second, third, and fourth linear acceleration signals, defining first and second sets of linear acceleration signals, and process at least one of the first and second sets of linear acceleration signals into at least one of a roll rate, a roll angle, and a yaw rate.

In the interview of 4/2/08, the Examiner stated that LaPlante was properly combinable with Tseng because one having ordinary skill in the art would combine LaPlante with Tseng to apply the benefit of LaPlante to Tseng. However, LaPlante does not teach, suggest, or disclose a filter configured to receive first, second, third, and fourth linear acceleration signals and process the same into at least one of a roll rate, a roll angle, and a yaw rate; therefore, LaPlante fails to teach that which Tseng lacks. In view of the foregoing, Applicants respectfully submit that even if Tseng and

LaPlante were properly combinable, Tseng and LaPlante in combination fail to teach each and every element of the present invention, as set forth in claim 1. Accordingly, Applicants respectfully submit that independent claim 1, and claims 2, 3, 5, 7, 9, and 11 dependent therefrom, are in condition for allowance, for at least these reasons. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

New claims 18-24 have been added. Claim 18 is directed toward a system for estimating body states of a vehicle. Like claim 1, claim 18 includes first, second, third and fourth linear accelerometers configured to generate first, second, third, and fourth linear acceleration signals, defining first and second sets of linear acceleration signals, based on acceleration of the vehicle in first and second directions, and a filter configured to process at least one of the first and second sets of linear acceleration signals to generate at least one of a roll rate, a roll angle, and a yaw rate. Thus, claim 18 is patentable over the art of record for at least the reasons given above.

In addition, claim 18 recites that the filter is configured to process the linear acceleration signals using a model to generate at least one of a roll angle, a roll rate, and a yaw rate, the model being based in part on distances along at least one of an x-axis, a y-axis, and a z-axis from each of the linear accelerometers to at least one of a yaw axis and a roll axis of the vehicle. Neither Tseng nor LaPlante teaches, suggests, or discloses a filter employing a model to generate at least one of a roll rate, a roll angle, and a yaw rate, wherein the model is based on distances from the linear accelerometers to at least one of the roll axis and the yaw axis of the vehicle. Therefore, claim 18 is also patentable over the art of record for at least these reasons.

New claims 19-24 generally depend from claim 18, which is patentable for at least the reasons given above. Therefore, Applicants respectfully assert that claims 19-24 are also patentable for at least these reasons.

SUMMARY

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot, and that pending claims 1-3, 5, 7, 9, 11-13, and 16-24 as amended, are patentable. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned at (734) 302-6022.

Respectfully submitted,

April 21, 2008
Date

/Bonnie R. Shaw/
Bonnie R. Shaw (Reg. No. 60,493)